

## Crystal ball questions on predicting Entropy change

*All of the following questions have not (as yet!) appeared in the NCEA Level 3 Exams*

1) Arrange the following 1 mol samples of water, all at the same pressure, in order of an increase in entropy.

H<sub>2</sub>O (s) at 0 °C

H<sub>2</sub>O (l) at 100 °C

H<sub>2</sub>O (l) at 0 °C

H<sub>2</sub>O (g) at 100 °C

H<sub>2</sub>O (l) at 25 °C

2) State which reactions result in an increase in Entropy

Reaction 1:  $\text{C}_2\text{H}_4(\text{g}) + 3\text{O}_2(\text{g}) \rightarrow 2\text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$

Reaction 2:  $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})$

Reaction 3:  $\text{CH}_4(\text{g}) + \text{H}_2\text{O}(\text{g}) \rightarrow 3\text{H}_2(\text{g}) + \text{CO}_2(\text{g})$

Reaction 4:  $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$

Reaction 5:  $2\text{Fe}_2\text{O}_3(\text{s}) \rightarrow 4\text{Fe}(\text{s}) + 3\text{O}_2(\text{g})$

Reaction 6:  $\text{AgCl}(\text{s}) \rightarrow \text{Ag}^+(\text{aq}) + \text{Cl}^-(\text{aq})$